

High Voltage Capacitor Charger for Photo-Flash Using LT3751

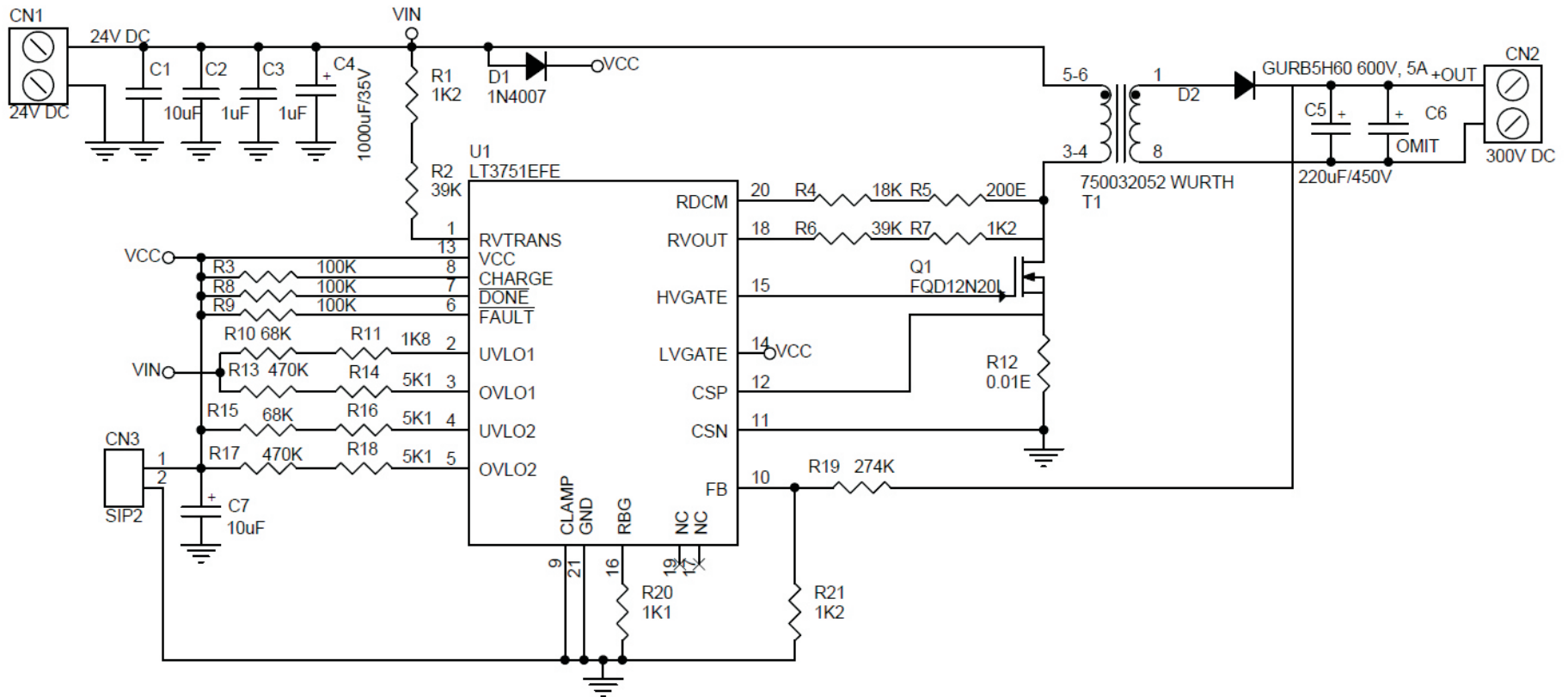
The project is built for professional photo flash systems. Circuit generates high voltage from low voltage battery to operate a photo-flash tube. The project also can be used in other applications like high voltage capacitor charger, emergency strobe, high voltage power supply, security, detonators. LT3751 is heart of the project.

The LT3751 is a high input voltage capable fly back controller designed to rapidly charge a large capacitor to a user-adjustable high target voltage set by the transformer turns ratio and three external resistors. Optionally, a feedback pin can be used to provide a low noise high voltage regulated output. The LT3751 has an integrated rail-to-rail MOSFET gate driver that allows for efficient operation down to 4.75V. A low 106mV differential current sense threshold voltage accurately limits the peak switch current. Added protection is provided via user-selectable overvoltage and under voltage lockouts for both VCC and VTRANS. This project can charge a 220 μ F capacitor to 300V in less than one second. The CHARGE pin is used to initiate a new charge cycle and provides ON/OFF control. The DONE pin indicates when the capacitor has reached its programmed value and the part has stopped charging. The FAULT pin indicates when the LT3751 has shut down due to either VCC or VTRANS voltage exceeding the user-programmed supply tolerances. CN1 supply input, CN2 output, CN3 is have no use.

Features

- Supply 24V DC
- Output 300V DC
- Charging time less the a second





Note: Output voltage adjustment is possible with few changes in resistor's value, refer table below table

Suggested Component Values

V_{OUT} (V)	$I_{OUT(MAX)}$ (mA) AT $V_{TRANS} = 5V$, 5% V_{OUT} DEFLECTION	$I_{OUT(MAX)}$ (mA) AT $V_{TRANS} = 24V$, 5% V_{OUT} DEFLECTION	R20 (k Ω)	R21 (k Ω)	R19 (k Ω)
100	180	270	3.32	0.383	30.9
200	110	315	1.65	0.768	124
300	75	245	1.10	1.13	274
400	55	200	0.825	1.54	499

BOM			
SR.	QNTY.	REF.	DESC.
1	1	CN1	2 PIN SCREW TERMINAL
2	1	CN2	2 PIN SCREW TERMINAL
3	1	CN3	2 PIN HEADER
4	1	C1	10uF/50V SMD 1210
5	2	C2,C3	1uF SMD 0805
6	1	C4	1000uF/35V
7	1	C5	220uF/450V
8	1	C6	OMIT
9	1	D1	1N4007 SMD
10	1	D2	GURB5H60 600V, 5A
11	1	Q1	FQD12N20L TO220
12	3	R1,R7,R21	1K2 SMD 0805
13	2	R2,R6	39K SMD 0805
14	3	R3,R8,R9	100K SMD 0805
15	1	R4	18K SMD 0805
16	1	R5	200E SMD 0805
17	2	R10,R15	68K SMD 0805
18	1	R11	1K8 SMD 0805
19	1	R12	0.01E SMD 2512
20	2	R13,R17	470K SMD 0805
21	3	R14,R16,R18	5K1 SMD 0805
22	1	R19	274K SMD 0805
23	1	R20	1K1 SMD 0805
24	1	T1	750032052 WURTH
25	1	U1	LT3751EFE SMD
26	1	C7	10uF/50V

